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Investigations

Enquêtes sur les
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Investigation
Report
to the Minister
pursuant
to sections
542 or 545
of the
Canada
Shipping Act

Rapport
d'investigation
au Ministre
conformément
aux articles 542
ou 545 de la Loi
sur la marine
marchande
du Canada

Canada

Ce rapport est aussi disponible en français.

INVESTIGATION REPORT INTO THE
CIRCUMSTANCES ATTENDING THE CAPSIZING
OF THE SMALL FISHING VESSEL
"FLYING O" WITH THE LOSS OF TWO
LIVES, IN THE STRAIT OF GEORGIA,
BRITISH COLUMBIA ON APRIL 26, 1985.

REPORT No. 453

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INVESTIGATION REPORT INTO THE CIRCUMSTANCES ATTENDING
THE CAPSIZING OF THE SMALL FISHING VESSEL "FLYING O" WITH THE
LOSS OF TWO LIVES, IN THE STRAIT OF GEORGIA, BRITISH COLUMBIA
ON APRIL 26, 1985.

Particulars of Vessel

Name	"FLYING O"
Official Number	393476
Port of Registry	Vancouver, B.C.
Gross Tonnage	14.44
Net Tonnage	8.80
Length OA	11.4 m
Breadth	3.54 m
Depth	1.65 m
Type	Fishing, 'combination vessel', currently engaged in longlining
Built	1979, Delta, B.C.
Number of Decks	1
Propulsion	One 'Bedford' diesel main engine, model 6 cylinder 333, built in 1979 and driving a single fixed pitch propeller.
Propeller Size	86 cm x 51 cm
Tail Shaft Size	51 mm
Cargo	None
Number of Crew	2
Owner/Operator	Harry Ortloff, Powell River, B.C.

NOTE: The copy of the certificate of registry listed the vessel as a yacht, but this was due to an error in the transmission of the information to the Central Registry office.

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Navigating Equipment

Radar	Sitex Koden, 48 miles
Echo Sounder	Skipper 603 recorder
VHF	Raytheon 55
CB	GE 40 channel
Compass	Wagner (dia. 13 cm)
Autopilot	Wagner, MK IV
Barometer	Airguide, 10 cm, clock and barometer set
Anchor	30 R Northill

Life-saving and Fire-fighting Equipment

Survival Suits	4 Fitzwright type
Lifejackets	3 (adult) DOT approved, standard keyhole
Lifebuoy	1
Fire Extinguishers	1-25 lb CO ₂ 1-2.5 lb Dry Chemical 1-12 lb Halon 1211

- NOTE:** 1. All times in this report are expressed in Pacific Standard Time (UTC minus 8 hours).
2. A glossary of abbreviations and terms can be found following the Findings in this report.

Background

The "FLYING O" departed the marina in Westview, B.C. near Powell River Harbour between 1000 and 1030 on April 26, 1986, bound for Prince Rupert, B.C. via Sharpes Bay for fuel and water.

Approximately one hour after sailing, the vessel capsized in position latitude 49°55.3'N, longitude 124°43'W, in moderate sea conditions with a strong south-easterly breeze.

Of the two crewmembers on board, one was lost overboard and as of the time of writing this report is still missing while the other crewmember was trapped in the forward compartment of the vessel where it is believed she remained alive for a few hours in a pocket of trapped air. Her body was later recovered from the forward compartment after the vessel had been righted.

The "FLYING 0" was one of about 100 similar fishing vessels built from the same GRP hull-form mould; therefore in the absence of an explanation for this casualty, there was concern for the safety of the remaining vessels. In addition, there were local complaints regarding the conduct of the SAR operations involving the "FLYING 0".

After salvage, the vessel was declared a constructive total loss; the normal insured value for such a vessel is in the \$85,000 range.

Particulars of Deceased

Name	Delores Emily Wilce
Position aboard Vessel	Deck-hand
Age	42
Address	Powell River, B.C.

Particulars of Missing Person

Name	Harry Wollaston Ortloff
Position aboard Vessel	Owner/operator
Age	49
Address	Powell River, B.C.

Narrative

The "FLYING 0" departed Prince Rupert on Sunday, April 13, 1986, bound for Westview with her two 795 L (175 gallon) fuel tanks on each side of the engine, filled to capacity, and approximately 455 L (100 gallons) of fresh water in each of the two tanks situated in the lazaret on the extreme port and starboard sides.

The voyage to Westview was uneventful, taking about 70 hours at an average speed of 6.5 knots while towing a herring skiff.

The next 13 days were spent at the Westview marina carrying out minor repairs with the occasional trip outside the harbour.

On the morning of April 26, the "FLYING O" departed Westview with the owner/operator in control and his companion as a crewmember. The last known person who saw the vessel leave the marina estimated their time of departure to be between 1000 and 1030. The vessel was heading first for a marina located on the Malaspina Peninsula east of Thulin Passage, locally known as Sharpes Bay. This is where the owner intended to buy fuel, water and possibly some ice for the trip north to Prince Rupert where the halibut season would start in a week's time.

On departure, the wind was from the east at 25-30 knots and the sea was a moderate south-easterly chop. A gale warning for south-easterly winds was forecast.

The owner of a pleasure craft moored next to the "FLYING O" assisted in her departure by casting off her mooring lines from the dock. At that time he noticed that the vessel was riding high in the water and mentioned this fact to the operator who did not seem to be concerned over this issue. The pleasure craft owner followed the "FLYING O" by sight as she went out of the marina and headed into Georgia Strait. He returned on board his boat after he had seen that the "FLYING O" seemed to be riding quite comfortably in the prevailing moderate sea conditions.

Shortly before noon, a retired person who lives on the beach between Atrevida Reef and Dinner Rock was having his meal and as is his custom, was glancing through the window at the water and the boats passing by. He noticed a fishing vessel that appeared to be to the south-east of Mystery Reef bellbuoy, heading in a north-westerly direction. Everything seemed normal as the small vessel was riding the moderate seas quite well; also he did not consider it unusual to see a vessel in that kind of weather.

Approximately 15 minutes later, the man again looked through the window and saw an unusual object in the water. He took out his binoculars to get a closer look and saw what he thought to be the capsized hull of a vessel. Having previously seen the small fishing vessel, he scanned the horizon but was unable to locate her. He tried to focus more closely on the object in the water but because of poor

visibility caused by the spray and the appearance and disappearance of the object amongst the waves, he was unsure of what he saw. He then decided to call his friend who lived nearby. The friend's son-in-law answered the phone and after having had the situation explained to him, he ran to the beach and onto a large rock from where he could have a better view. He saw what he thought was a foundering vessel and ran back to the house. He contacted the retired person and, after having confirmed that indeed there seemed to be a vessel in difficulty between Mystery Reef and Savary Island, he phoned the RCMP and gave them the limited information that he had.

The phone call made by the concerned citizen to the RCMP was logged at 1253 and information was transmitted to RCC Victoria at 1254, advising them that a vessel was in difficulty near Mystery Reef. At 1254, the marine controller on duty at RCC called the two concerned citizens for further information and confirmed that a vessel appeared to be in possible difficulty half-way between Mystery Reef and Savary Island. At 1315, the CCGC "TEAL" was tasked by RCC to investigate the report and a general marine broadcast was issued by CGRS Comox at 1320 on VHF channels 6, 16 and WX1.

Two small sailing vessels, the "WHIRLWIND" and the "ITHIQUA" responded to the radio call almost immediately on VHF channel 6 and acknowledged that they would investigate. On approaching the vessel in difficulty, the "WHIRLWIND" reported the weather on location to be: south-easterly winds at 20 knots with a 1.2 m moderate sea and the "ITHIQUA" reported that she could see persons on the overturned hull of the distressed vessel. A few minutes later, when approximately 150 m from the wreck, the "ITHIQUA", a CMRA vessel, reported to Comox Radio that the distressed vessel had capsized, that bubbles could be seen round the hull and that she could not see anybody in the water. About an hour later, the "TEAL", upon learning that there was a possibility of 3 persons being aboard the "FLYING O" at the time of the casualty, requested Comox Radio to pass the message to RCC. Some 3 minutes later, the "ITHIQUA", upon hearing this conversation on VHF, once again indicated that she had possibly seen not more than 2 persons from the distressed vessel but at the time of the observation she was some distance from the "FLYING O" and was not equipped with a pair of binoculars.

At 1341, a 'MAYDAY' relay was broadcast by CGRS Comox on VHF channels 6, 16 and WX1. The Labrador helicopter from Squadron 442, Canadian Force Base Comox, was alerted and at approximately 1445, it arrived on scene with two SAR Techs on board. The CCGC "TEAL" was underway at 1328 from Westview marina and at 1340 gave CGRS Comox an on-scene ETA of

20 minutes.

In the small harbour of Lund, a few miles up the coast from Powell River, some local people were listening to their radios and picked up the conversations on VHF channel 6 between the small sailing vessel "ITHIQUA" and the CGRS Comox. This was at 1335 when the "ITHIQUA" identified the overturned vessel as the "FLYING O" from Westview Harbour. The word spread among the local fishermen that the "FLYING O" had capsized and a group of them sailed out of Lund Harbour at about 1400 aboard the fishing vessels "MIDNIGHT DANCER" and "JOLLY DOG" and arrived on scene 15 minutes later.

The CCGC "TEAL" was designated On-Scene Commander; she arrived on scene at 1410. The "FLYING O" in approximate position latitude 59°56'N, longitude 124°44'7"W, was floating upside down with only about 1.4 m of the forward hull showing out of the water and the keel approximately 30°-35° to the horizontal. The propeller and the rudder stock were only visible occasionally with the vessel's motion in the waves. The "TEAL" slowly approached the "FLYING O" to check for people in the water or for long floating lines that could be a danger to other vessels. At that time, an opened survival suit was seen floating about 40 m from the "FLYING O" and in the direction of Savary Island. The "TEAL" operating in 4.5 m of water, went to retrieve the suit. RCC then requested the "TEAL" to deploy a 'datum marker buoy' and this was done at 1425.

The "TEAL" then went alongside the "MIDNIGHT DANCER" to discuss the possibility of securing a line on board the "FLYING O"; the "TEAL" decided to let the "MIDNIGHT DANCER" try to secure a line on board because the fishing vessel had more crewmembers. The "TEAL" had three crewmembers while the "MIDNIGHT DANCER" had seven; also it was felt that the heavier "MIDNIGHT DANCER" would manoeuvre better than the "TEAL" in the prevailing weather conditions.

The crew aboard the "TEAL" started to prepare the inflatable boat that was carried from davits on the stern. However, it was impractical to attach the outboard engine while the inflatable was still on the davits, and the weather was too rough to fit the outboard engine to the inflatable in the water. A line was therefore thrown from the "MIDNIGHT DANCER" and attached to the inflatable. In turn, the inflatable was pulled to the "MIDNIGHT DANCER" and boarded by one of the fishermen. Paddles were requested and obtained from the "TEAL". The inflatable was then rowed towards the "FLYING O" with a towline attached. As the towline was paid out from the "MIDNIGHT DANCER", the additional weight of the towline prevented the inflatable from advancing in the

prevailing adverse weather conditions and consequently, the inflatable was brought back to the "MIDNIGHT DANCER".

The "JOLLY DOG" then advised the "TEAL" that the 'datum marker buoy' had been seen off Mace Point. The "TEAL" then requested "MIDNIGHT DANCER" to carry out a 'barrier search' of the area while the tug "HAIDA WARRIOR" was searching between Copeland Islands and Savary Island and the tug "SEASPAN CAVALIER" was searching around Mystery Reef. The fishermen became increasingly frustrated with the lack of progress in securing a line to the "FLYING O" to keep the hull from drifting further into shallow water.

When the inflatable was being launched, the "TEAL" experienced port engine problems that impaired her manoeuvrability.

On three occasions, the lines floating from the "FLYING O" were secured to the "JOLLY DOG" in an attempt to prevent the former from drifting further inshore, but all attempts failed as the lines parted due to their short length in the prevailing sea conditions. At this time, the "FLYING O" was reported to be floating, but drifting rapidly towards shore.

At 1455, the SAR helicopter 'R-304' arrived on scene. At 1508, two SAR Techs, equipped for diving, jumped from the helicopter into the water and swam to the capsized vessel. The helicopter then landed on the beach. The "JOLLY DOG", being of relatively shallow draught, was standing close by. The divers swam around the wreck, underwater, from the offshore or starboard side for a first inspection. They looked through a window and saw much debris inside. In the process, one of the divers became entangled in some rigging or net from the vessel and had to be freed from the rigging/net by his partner. At that time, the vessel was bouncing on the bottom with the mast frequently coming in contact with the sea-bed; the clearance between the top of the cabin and the sea-bed was about 0.6 m. Both divers then circled the vessel, one with his head above water and the other swimming underwater. They moved around the vessel and were knocking on the hull when one of the divers who was close to the surface of the water heard a voice that he thought came from inside the forward compartment on the port side of the vessel and the words, as remembered, were "help get me out of here". A 'rumbling' noise from underwater was heard by the other diver at the same time; he surfaced immediately thinking that his partner was calling but was told of the voice within the hull. He started immediately to make distinct noises on the hull with the handle of the knife that he had kept in his hand after having freed his partner

from the rigging/nets. No further noises or voice were heard from the vessel but it must be understood that there was a moderate to heavy swell, rolling the hull and swirling the divers about, making it very difficult for them to stay close. Every time the vessel was heavily moved by the swell, air was escaping from the hull causing bubbles around the vessel. The time spent outside the vessel trying to gain access was approximately 35 minutes but it proved impossible as a mass of debris was blocking the entrance to the vessel. Further, the work involved in trying to remove the debris proved to be very exhausting and the air supply was diminishing rapidly. Meanwhile the hull was slowly drifting ashore.

A decision was then taken by the SAR Techs to swim ashore and brief the helicopter pilot who then decided to return to Comox base for more air bottles and additional divers. RCC and the "TEAL" were up-dated on events. The two SAR Techs stayed on the beach to observe the vessel.

During that time a small shallow draught log salvage tug the "STRAIT SHOOTER" was sent for by the fishermen. This tug, operated by a single crewmember, arrived on the scene and picked up two crewmembers from the "MIDNIGHT DANCER". They agreed between themselves that the best action was to roll the boat upright. The "STRAIT SHOOTER" proceeded towards the "FLYING O" and as the SAR Techs were on the beach, one of the fishermen jumped on the overturned hull, and hooked a line on the inshore (port) side of the boat. The "FLYING O" was partially righted by the "STRAIT SHOOTER" at which time the man, who was still standing on the hull, jumped clear. The SAR Techs then swam back to the boat without their air tanks; they told the man in the water to swim ashore immediately as he only wore a lifejacket and normal clothing. The SAR Techs swam to the vessel and climbed on board the hull from the offshore side, trying to clear a passage. They were very cautious of entering the inside of the cabin as the vessel was held in this position by the line from the tug and, as they had no breathing apparatus, they could find themselves in serious difficulty if the vessel was to roll over again. One of the divers then went inside the cabin while the other stayed outside and they cleared more debris.

By this time, the helicopter was back from Comox with four additional SAR Techs and more air bottles. With this additional help, the SAR Techs were eventually able to pull away a very heavy foam mattress that was blocking the entrance to the forward compartment. The feet of a person were then seen protruding from the doorway between the wheelhouse and the forward compartment. The female crewmember was

found with a lifebuoy around her waist, and she was immediately pulled out of the compartment by the SAR Techs. The victim was unconscious and cold with no apparent sign of life; nevertheless, artificial respiration was started without delay; she was floated ashore with the help of a lifejacket and taken to the Saint Joseph's Hospital at Comox while CPR was administered to her during transportation in the helicopter. Upon arrival at the hospital, no sign of life was detected but, as the victim had suffered from hypothermia, CPR was continued and the victim declared dead some time later.

While the woman was being transported to shore by two SAR Techs, the other SAR Techs were searching the vessel for the reported second crewmember. They could not enter the forward compartment because the waves were breaking over the bow and kept washing the SAR Techs away. There was now no line from the tug holding the vessel as it had been let go, after the woman had been taken away. With the vessel in a precarious situation on her side, it was considered unsafe to completely enter the forward compartment; however, no one could be seen through the access door.

The "FLYING O" was pushed higher on the beach by the flood tide and the south-easterly seas where the SAR Techs secured her so that the vessel would stay 'high and dry' at low tide. At low tide, the hull was searched and inspected. An extensive sea search was carried out throughout April 26 and 27, but the operator was not found and is still missing at the time of writing this report.

The vessel was pulled from the beach on April 27 and towed to Lund where she was hoisted on the slipway. She was later towed to Vancouver where she arrived on May 7. The "FLYING O" was raised onto the wharf where she was inspected by a surveyor from the insurance company. She was then declared to be a constructive total loss and at this time the vessel is still ashore awaiting a decision on her future.

There was no reported pollution caused by this incident.

Analysis

1. Description of Vessel

The "FLYING O" is a 'Deltaga' fibreglass hull of hard chine and of closed construction. She was built as a troller from a mould. When the hull was sold to the present owner, the two bulkheads forming the fore and aft sides of the fish hold, the rudder, the tail shaft and the stuffing box were in place.

The engine sits slightly forward of amidship under the cabin floor. Amidships, and directly under the console is the small door leading to the forward compartment through a 1 m high step-ladder.

The steering position is to the port side of the forward access door and there is a door leading onto the after deck on the starboard side, aft of the cabin.

A gillnetter drum was situated between the lazaret and the fish hold hatch cover and directly over the after end of the fish hold.

The type and arrangement of the equipment are at the discretion of the owner who, in outfitting a new hull, generally follows the same pattern for similar fishing vessels. This was the case with the "FLYING O" but in the winter of 1985, the owner altered the configuration of his vessel by raising the drum by approximately 45 cm (18 in), extending the fish hold by approximately 1.2 m (4 ft) aft and raising the deck (or the deckhead of the fish hold) by about the same height as the drum (45 cm).

2. Certification of Vessel

The "FLYING O", being under 15 gross tons, came under Part II of the Small Fishing Vessel Inspection Regulations which refer to the carriage and approval of the life-saving equipment, navigation lights and signals, the fire-extinguishing equipment and precautions against fire (see Annex I).

There is no provision in the regulations for inspection of this vessel and compliance with the provisions is exclusively the responsibility of the owner and operator.

The "FLYING O" met the requirements of the regulations and exceeded them as far as the life-saving and fire-fighting equipment were concerned. Additionally, the vessel had been inspected by a private surveyor as a condition of her insurance.

3. Condition of Vessel and Equipment

The vessel appeared to be extremely well cared for, but when recovered was in a severely damaged condition, the structural damage being confined mainly to the cabin and wheel-house top. There was no apparent damage to the rudder and propeller. Neither the stabilisers nor the main anchor had been deployed. The exact amount of fuel

and fresh water aboard could not be determined but there appeared to be very little. The main hatch cover did not appear to be secured as it was found on the beach nearby, but with the vessel's freeboard, this is not thought significant. Because of the damage and time spent in the surf with surging debris, the position of some controls may have been moved, but these were found as follows:

autopilot - off
engine start key - in off position
throttle - low
clutch - neutral

There was no evidence of solid ballast and none was believed to be on board. Three immersion suits were found in their bags on the beach and one was picked up at sea in an opened condition.

4. Radio

Whilst the radio equipment on board the "FLYING O" was licensed in accordance with the Radio Act and the regulations made pursuant to the Act, the operator did not hold a Restricted Radiotelephone Operator's Certificate contrary to section 65 (3) of the Ship Station Technical Regulations (For excerpts of Regulations see Annex V).

5. Weather

The marine forecast for B.C. coastal waters issued by Environment Canada at 0445 Saturday, April 26, 1986 read in part:

GEORGIA STRAIT

Small craft warning upgraded to gale warning.

Winds southeast 15 to 25 knots increasing to southeast 30 to gales 40 this afternoon. Rain beginning this afternoon. Visibilities occasionally reduced to 3 miles in precipitation.

Outlook - Strong to gale force southeast winds becoming moderate northwesterly.

The marine area forecast for B.C. coastal waters issued by Environment Canada at 1045 Saturday, April 26, 1986 read in part:

GEORGIA STRAIT

Gale warning continued.

Winds southeasterly 25 knots to gales 35 diminishing to southerly 10 to 20 Sunday morning. Intermittent rain lowering visibilities to 3 miles at times.

Outlook. Moderate to strong southerly winds.

The local weather conditions as reported around the time of departure of the "FLYING O" were south-easterly winds at 20 knots with 0.9 m - 1.2 m high waves.

By 1300, the wind was reported at Merry Island from the east at 24 knots with a 1.2 m moderate 'chop' sea.

By all accounts, the reported weather was not severe enough to keep a fishing vessel of this size from going out. Although the owner departed Westview marina against a gale warning, his immediate destination was Sharpes Bay, a distance of only fourteen nautical miles. At a speed of seven knots, this was to be a two-hour trip in south-easterly winds of 20-25 knots and wave heights of 0.9 m - 1.2 m.

6. Tide

The low tide of 0.2 m was at 1250 on April 26 and since it is assumed that this was the approximate time of the incident, the tide effect was deemed to have had no bearing on the casualty.

7. Stability

As an uninspected fishing vessel under 15 gross tons, the "FLYING O" was not required to comply with an approved stability standard by regulation.

No records could be traced of stability calculations for the "Deltaga" design of hull or stability tests on the "FLYING O". This is not unusual because the normal practice for these small vessels is to follow experience. The owner, in this case, equipped his vessel from pictures taken of existing fishing vessels built with the same hull design.

The size of the engine was relatively small for the vessel but was preferred by the owner as he was familiar with the engine and had confidence in this type.

However, the engine provided less bottom weight than most in that type of hull.

Since construction, a period of some five years, the vessel fished on the West Coast for salmon and halibut without encountering any unusual problems.

In accordance with good seamanship, it is common practice for fishermen not to go out in adverse weather and sea conditions without a full load of fuel and/or ice in order to lower the centre of gravity and for most vessels, to keep the stern low in the water; the vessels then ride better and are safer.

During early 1985, the owner had the drum raised by approximately 45 cm; this was carried out to enable him to increase the size of the fish hold. Also, two fibre-glass boxes 60 cm x 120 cm x 60 cm, were built and installed on the deck above the cabin of the vessel to stow some equipment and fishing supplies. What was in these boxes at the time of the casualty is unknown as any contents were lost in the capsizing.

With these modifications, the "FLYING O" fished the whole 1985 season for halibut and salmon, riding gales and storms quite comfortably. Locally, the "FLYING O" was considered 'a good boat' and her skipper a very experienced and prudent seaman.

On April 26, the "FLYING O" departed Westview marina without any ice and with little fuel and water. It seems that the owner wanted to take ice in Lund, and fuel and water in Sharpes Bay. On hearing that there was no ice in Lund due to some mechanical problem with the ice plant, he intended to refuel in Sharpes Bay and take ice in Port Hardy for the trip to Prince Rupert.

A witness who saw the "FLYING O" depart the marina, estimated that the stern was about 20 cm higher in the water than would seem usual in the circumstances (see photograph). Normally, the vessel would sail with a draught deep enough to cover the anti-fouling paint but this time, about 20 cm of the red paint was showing; that would leave only approximately 50 cm before the bottom of the transom would lift out of the water.

The "FLYING O" had positive stability on departure from Westview as she was upright and seemed to behave normally at sea when last seen. However, the transverse stability she had, was clearly overwhelmed by the external forces acting on the vessel at the time of capsizing.

Capsizing can be brought about by the occurrence known as 'synchronous rolling', which is a dangerous condition that can arise when a vessel's natural period of roll coincides with her period of encounter with the waves in which she is sailing. This synchronization causes the vessel's angle of heel to progressively increase with each successive roll and, if unchecked, will continue until her range of positive transverse stability is exceeded and capsizing occurs. Synchronous rolling can be eliminated by a change in vessel speed and/or course which will alter her period of encounter with the waves. Small vessels, because of their relatively short period of roll and limited dynamic stability are more prone to meet and experience this condition than large vessels, and if it is not recognised in time and left unchecked, capsizing can occur relatively quickly.

Also, a small vessel in a following sea will yaw, roll and pitch as it is tossed about by waves. The "FLYING O", being of a hard chine form and having a light draught at the stern, may possibly have been caught by a wave hitting under the stern when the latter was out of the water, causing the vessel to be rolled rapidly and heeled to such an angle that she was unable to recover.

There is no doubt that the modifications carried out to the vessel in 1985, the raising of the drum and the addition of supply boxes on the cabin top, raised the centre of gravity of the "FLYING O" thereby reducing her initial transverse stability and range of positive stability.

Reportedly, there were eight halibut anchors weighing 16 kg each, resting by their flukes on the stern rail and with the vessel rolling, those anchors probably shifted to the low side adding to the capsizing moment. The drum was full to capacity with the longlines, complete with hooks, having an estimated weight of 1 t.

8. Operator's Health

Both of his eyes were severely damaged in an explosion that took place during his childhood. He had difficulty recognizing faces across a room and reading newspapers and charts. A doctor had recommended the use of an illuminated stand or hand magnifier that would permit him to read charts and maps. Consequently, it would have been prudent for him to have had on board a 'sighted person' with navigational capabilities.

The last time the "FLYING O" was thought to have been seen by the concerned citizen, it appeared that she was being properly navigated, giving no indication of being off course; all later indications point to the fact that the vessel was sailing in deep water, north of Mystery Reef.

At the time of the casualty, in the prevailing following sea state and, with the extreme light condition of the "FLYING O", failure to correctly meet a sea because of poor eye sight, could well result in a capsizing.

9. Cold Water Survival

The cold water survival chart (See Annex II) contained in the Red Cross publication Cold Water Survival shows that with a seawater temperature of 10°C which existed, average persons have a strong possibility of survival if rescued and can help themselves, up to 1 3/4 hours after the immersion. After 1 3/4 hours and up to 3 hours in the water, persons have a 50% possibility of survival but would be weak and unable to help themselves. However, in this instance, as the woman had a lifebuoy round her waist, the upper half of her body was not immersed, thereby reducing the rate of cooling of her body and consequently, increasing her survival time.

10. Cause of Death

The woman recovered from the "FLYING O" at 1655 was immediately flown to hospital where, following examination, she was pronounced dead some time after arrival.

An autopsy performed on the body of Delores Wilce showed the cause of death to be salt water drowning and the estimated time of death to be 1630. The toxicological results were negative.

The body of Harry Ortloff was not recovered and he is presumed drowned.

11. Search and Rescue Operations

The first phone call from a concerned citizen was logged by the RCMP at 1253. The first reports were vague in reporting a vessel in difficulty. RCC Victoria, after making some phone calls to the concerned citizens, issued a General Marine Broadcast (GMB) through CGRS Comox (VAC) and tasked the CCGC "TEAL" to investigate. No distress messages or signals had been received or seen from the vessel.

Two small sailing yachts responded to the GMB, the "WHIRLWIND" and the CMRA "ITHIQUA".

At 1341, confirmation was received from the "ITHIQUA" that a vessel had indeed capsized and the vessel was then identified to be the "FLYING O", as the name was visible on her stern.

A 'MAYDAY' relay was broadcast and the SAR units tasked and/or utilized, are named in Annex III.

Although minor difficulties were encountered with the pagers used by the crew, the "TEAL" departed within 13 minutes of being paged, well within the Coast Guard guidelines. The CCGC "TEAL" arrived on scene at 1410; she had earlier stopped to request an American yacht "MR. COMA" to assist in the search and look for people in the water: the communication was directly by voice but shortly thereafter, the American yacht asked VAC by VHF to be stood down.

When first spotted by the "TEAL", the "FLYING O" was in latitude 49°56'N, longitude 124°44.8'W in a capsized condition. As the "TEAL" was circling the vessel looking for survivors and checking for lines or nets from the fishing vessel, an open survival suit was sighted about 40 m away. This open unzipped survival suit gave the impression that someone had tried to put it on. This suit was picked up by the "TEAL" and the search for other people in the water was then directed towards a group of buoys in the hope that someone would have hung on to the buoys. These buoys were used to mark the locations of the fishing lines that were attached to the stern.

With the arrival of the "MIDNIGHT DANCER" and the "JOLLY DOG" who were on the scene shortly after leaving Lund, a decision was made to try to secure a line to the "FLYING O" to keep her from drifting onto the beach. Those on scene were aware that survivors could be trapped in an air pocket inside an overturned vessel and this was foremost in their minds.

The "TEAL", being restricted in her ability to manoeuvre and, with a limited crew of three including the coxswain, agreed that her rubber boat be passed to the "MIDNIGHT DANCER" to enable her to use her crew and secure a line aboard the "FLYING O": there were seven crew aboard the "MIDNIGHT DANCER", all experienced fishermen.

The rubber boat on the "TEAL" is carried from davits on the stern (see photo) but the outboard engine is stowed separately inside the "TEAL". Due to the manner in which the rubber boat is carried, it is not practical to install the outboard motor before the boat is in the water. In this case the seas were too rough for the crew to fit the outboard motor and paddles were given to the "MIDNIGHT DANCER" crewmember who boarded the rubber boat. This crewmember was able to paddle half-way to the "FLYING O", towing a line from the "MIDNIGHT DANCER", but he had to abandon the attempt when the weight of the towline became too heavy and, in the prevailing adverse weather conditions no headway could be made.

During these manoeuvres, the "TEAL" experienced engine difficulties when the port engine became stuck in the forward position. At the time, the extent of the problem could not be investigated.

At 1425, RCC called a diving shop in Powell River but, being a Saturday afternoon, there was no answer; however, a diver was located a few minutes later. By this time it had been reported that a crew of two were thought to be aboard the "FLYING O".

During the initial stages of the SAR operation, RCC requested the Lund water taxi to take a diver to the scene but the taxi elected to defer the trip until he had collected and delivered another passenger. The captain of the Labrador SAR helicopter 'R-304' who was on a two-hour response, was paged at 1344 and was airborne by 1430 with six crewmembers, including two SAR Techs. Diving to a maximum depth of 15 m is one of the numerous tasks that SAR Techs are required to perform in their operational role. The SAR Techs were dressed in their diving suits, each being equipped with one bottle of air, of 2 m³ at 20,685 kPa, as their standard emergency equipment. The captain was briefed earlier by RCC that diving under the vessel might be required. They were on the scene approximately 15 minutes after departure and the "FLYING O" was easily detectable from the air. It appeared partially aground, striking the beach heavily with each wave; close by was the "JOLLY DOG" and there was radio contact by VHF between the helicopter and this fishing vessel.

The SAR Techs, with the permission of the captain, jumped from the helicopter and swam to the vessel, whose stern was well under the water. They swam around the vessel twice to assess the situation and from the off-shore side, dove around the vessel, underwater; a

large amount of debris was blocking all the entrances: looking through a window it was, again, a mass of debris.

While swimming around the vessel, one diver became entangled in a line or net from the vessel and it had to be cut by his partner in order to free him. Swimming back up and around the vessel, one of the SAR Techs heard a voice that appeared to be coming from forward, inside the hull.

The "JOLLY DOG" became aware that, perhaps, someone might be trapped inside. The SAR Techs checked again for any means of entry and quickly realized that they would need more air and help to clear the debris and find a way inside the hull.

They swam back to shore, where the SAR helicopter had landed, and informed the helicopter pilot of the developments. The helicopter took off immediately for Comox, after the pilot had radioed in his requirements so that there would be no time lost at the base.

During this time, the CCGC "TEAL", under direction from RCC, had been deploying a 'datum marker buoy' and was trying to organize a search of the area for the crew of the "FLYING O", thought to be in the water. There was difficulty with co-ordination between the "TEAL" and the fishing vessels, whilst the "TEAL" was engaged in trackline search around Mystery Reef.

The 'datum marker buoy', a specially designed high visibility buoy, is deployed to act as a drifting datum point for search craft.

As the crew aboard the "JOLLY DOG" were of the opinion that someone was trapped inside the hull of the "FLYING O", the "JOLLY DOG" informed "TEAL" at 1520 that the SAR Techs were back on the surface and that there was much debris to be cleared.

In the meantime, the "MIDNIGHT DANCER" had sent for a log salvage, shallow draught tug, the "STRAIT SHOOTER". When she arrived on scene, two men from the "MIDNIGHT DANCER" boarded her and they were able to get close enough to the "FLYING O" for one of the men to jump onto the upturned hull. He hooked a line from the tug to the side of the wreck, stayed on the hull while the vessel was being righted by the more powerful tug and jumped at the last minute as the hull turned to lay on her side.

The scene had been witnessed by the two SAR Techs who were on the beach discussing ways to enter the hull safely. On realizing what was happening, they swam hastily to the partially righted vessel being held in place by the tug keeping a strain on the towline, and told the man in the water to go ashore, which he did. By this time, the SAR Techs were out of air and were unable to dive.

The SAR Techs were then able to board the vessel but they had to be very careful in case the towline parted and the vessel returned to her capsized position; if so, they would have been trapped inside without air or any other equipment.

It was about this time, at 1605, that 'R-304' returned with more air and additional SAR Techs.

The SAR Techs then went inside the cabin and saw that a wooden ladder and foam mattresses were blocking the entrance to the forward compartment. These were removed with great difficulty as they were very heavy and the wreck continued to pound in the surf; it was then that they saw the female crewmember floating face down, coming through the doorway; she had a lifebuoy around her waist. She was pulled out of the water unconscious and cold with no apparent sign of life; the time was 1655. Attempts to revive the victim were made both en route to the hospital by the SAR Techs and at the hospital by the medical staff but the victim did not respond. She was 'entered-in' at the hospital at about 1705 and was declared dead at 1744 by the attending physician.

At 2000 on April 26, the SAR search for the other missing crewmember was called off for the day. On April 27, the full-scale search was resumed by both vessels and aircraft but without success and at the end of the day, the case was turned over to the RCMP as a 'missing person case'.

12. Problems Experienced in SAR

In summary, difficulties were experienced in the SAR operation because:

- a) The "TEAL" is a small craft, of lightweight pleasure craft design, with only a crew of 3, two of whom are volunteers.
- b) The "TEAL" was tasked by the RCC as On-Scene

Commander (OSC) as the RCC requires a local vessel on scene to direct SAR according to local conditions. To RCC, this was particularly important because of the lee shore and rough, shallow water situation. This was an extremely difficult task for the OSC as he was expected to safeguard his own vessel in shallow water, handle communications and perform various functions of an OSC. (See Annex IV for responsibilities of OSC).

- c) For maximum visibility, the "TEAL" has to be controlled from the flying bridge, but communications equipment on the RCC and aircraft frequencies are only installed in the lower bridge.
- d) The port engine control for the "TEAL" was erratic in operation, subsequently found to be due to a stripped bolt.
- e) It is not practical to have the outboard engine for inflatable boat aboard "TEAL" installed with the boat on the davits. The outboard motor has to be fitted when the boat is in the water and, on this occasion, the seas were too rough to fit the motor.
- f) There were two distinct tasks which had to be carried out:
 - i) to keep the "FLYING O" in water deep enough to prevent the vessel from pounding on the bottom and institute a search of the hull, and
 - ii) to establish a track and barrier search for possible crewmembers in the water.
- g) There was no place to secure a line on the upturned hull so that the line would be effective in towing the vessel out of the shallow water.
- h) A SAR helicopter is restricted in the load it carries and consequently, the standard SAR equipment includes only one air bottle per set of diving equipment.
- i) Although the SAR Tech's diving gear is assembled as a 'kit' in a box ready for instant placement in the SAR helicopter, on arrival at scene it was discovered that the weighted diving belts were missing from the kit. Weight belts were borrowed from the "JOLLY DOG" but reportedly were neither required nor used.

- j) It was unacceptably hazardous for the SAR Techs to enter the capsized vessel which was pounding on the bottom, in the shallow water with the debris that existed.
- k) Unable to prevent the vessel from drifting into the heavy surf and, with survival time for any person trapped inside running out, the decision was made by the on-scene fishermen, without reference to the Search Organisation, to right the vessel, which action released whatever air had been trapped inside.
- l) Offers of help from other craft were declined by RCC because of the perceived difficulties of effectively controlling more craft in a relatively narrow section in the vicinity of shallow water, thereby unduly exposing additional craft to the danger.
- m) The area where the "FLYING O" capsized and drifted ashore is very exposed and subject to strong tidal currents.

13. Capsizing of Fishing Vessels

Nationally, over the last 10 years, an average of eight Canadian fishing vessels have capsized every year. In those 10 years, a total of six, including the "FLYING O", of small (10 m approx.) GRP mould design have capsized on the West Coast. Although unacceptable in terms of safety, the statistical record of these small GRP vessels capsizing is relatively good. Virtually all the capsizings are directly due to imprudent operation, many associated with increased top weight of added gear and equipment. There is however a steady increase of capsizings over the years:

Canadian Fishing Vessels - Reported Capsizings

Year	No. of capsizes	No. of capsized FVs declared a total loss	No. of Associated deaths
1976	3	0	15
1977	6	2	5
1978	5	3	14
1979	6	0	2
1980	8	4	4
1981	6	4	3
1982	8	0	4
1983	8	4	11

1984	14	9	8
1985	15	7	9
Total	79	33	75
Average	8	3	7.5

As can be seen from these figures, many of the capsized vessels are salvaged. A vessel floating in the inverted position, particularly 'stern-down', will normally stay afloat for some hours and many do so for a day or more due to buoyancy provided by the entrapped air in the forward end of the vessel.

14. Crew Experience

"FLYING O"

The owner of the "FLYING O", aged 50, had a lifetime of fishing experience on the B.C. coast. He was very well known and respected as a good and prudent seaman and had not been involved in any other known previous casualty.

His companion was new to the sea and was not known to other local fishermen. It was apparently her first trip on the vessel.

"TEAL"

The coxswain had six years experience in the Coast Guard with two years as relief coxswain. He had served in Powell River for a total of some 12 weeks and had completed a six-week coxswain course and a three-week Heavy Weather course.

One crewmember, in his mid-40's, had worked as a volunteer for about one year aboard the "TEAL" and had 4 years experience in the CMRA; his normal work is ashore. The other crewmember, of similar age, was on his third SAR mission as a "TEAL" crewmember. He also normally worked ashore.

This was the first life-threatening rescue situation for all three persons.

Findings

In the absence of any witnesses, the precise cause of the capsizing of the "FLYING O" cannot be ascertained but it is probable that due to imprudent operation, the vessel's

transverse righting ability was overcome by the prevailing sea and weather conditions. It would appear that the following factors contributed to the casualty:

- sailing the vessel in an extremely light condition with no ice and little gear, water and fuel below;
- sailing the vessel with the drum fully loaded with longlines and hooks and the fishing gear (anchors) on deck;
- the already relatively large fishing gear drum was relocated higher above the deck;
- installing new, large, gear boxes on the cabin-top;
- free surface effect of the liquids; and
- the normal heavy rolling in a quartering sea.

Other Findings:

The rescue of a person trapped in a capsized vessel is at best difficult and, in this case, was further compounded by the prevailing weather conditions, the proximity of the vessel to the beach and the well-intentioned, but unfortunate, righting of the vessel.

There were difficulties encountered in the SAR operation, primarily due to:

- the problems in attempting to prevent the capsized fishing vessel from drifting into shallow waters and pounding on the bottom, without righting her during the process;
- the enormity of the tasks assigned to the small SAR cutter, manned by a single professional SAR officer and two other crewmembers, expected to perform the duties of On-Scene Commander, conduct a search for survivors and deploy equipment, whilst still ensuring the safety of the cutter and her crew in confined and shallow waters; and
- this lead to a deterioration of co-operation between the SAR cutter and assisting fishing vessels.

The capsizing was sudden and no warning of distress by those aboard the "FLYING O" was possible.

The weather conditions were not extreme and were such that the "FLYING O", with the correct weight distribution, should have easily weathered.

OTTAWA, ONTARIO
DECEMBER, 1986.

GLOSSARY

CCGC	Canadian Coast Guard Cutter
CGRS	Coast Guard Radio Station
CMRA	Canadian Marine Rescue Auxiliary
CPR	Cardo-Pulmonary Resuscitation
Datum Marker Buoy	A specially designed high visibility buoy deployed to act as a drifting datum point for search craft
Range of Stability	The number of degrees of heel from the upright position over which the righting arm is positive
RCC	Rescue Co-ordination Centre
RCMP	Royal Canadian Mounted Police
SAR	Search and Rescue
SAR Tech	Search and Rescue Technician
Stow	To put gear/provisions in the proper place

ANNEX I

PART II

FISHING VESSELS NOT EXCEEDING FIFTEEN TONS, GROSS TONNAGE

Application

52. This Part applies to fishing vessels not exceeding 15 tons, gross tonnage, that are not sailing ships.

Life Saving Equipment, Lights and Signals

53. (1) In this section, "approved", when used in reference to an article, means that the article has been built in accordance with the standards therefor in the Life Saving Equipment Regulations and has been approved by the Board.

(2) Every fishing vessel not exceeding 12.2 m in length shall carry

(a) one approved life jacket for each person on board;

(b) one approved lifebuoy fitted with 27 m of line; and

(c) one watertight can containing six approved self-igniting flares.

(3) Every fishing vessel exceeding 12.2 m in length shall carry

(a) one approved life jacket for each person on board;

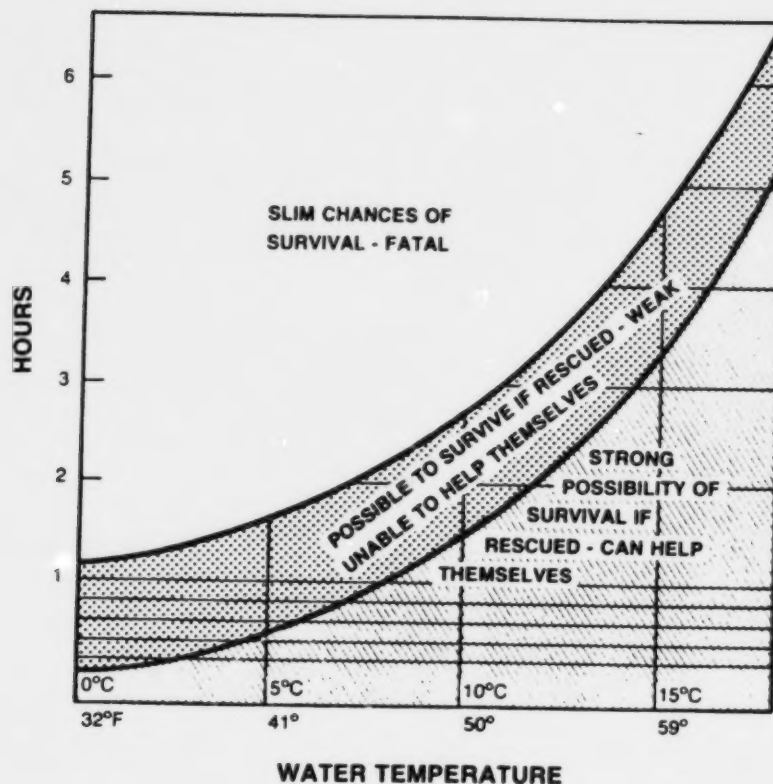
(b) a sufficient number of lifeboats, boats, dories, skiffs or seine skiffs to accommodate all persons on board the vessel; and

(c) one watertight can containing six approved self-igniting red flares.

(4) Every fishing vessel shall carry sufficient lights and equipment to comply with the Collision Regulations, and such lights shall be oil or electric.

ANNEX II

COLD WATER SURVIVAL



The accompanying graph shows average predicted survival times of average, adult humans in water of different temperatures. The figures are based on experimental cooling of average men and women who were holding still in ocean water and wearing a standard lifejacket and light clothing. The graph shows, for example, that predicted survival time is about 2½-3 hours in water of 10°C (50°F). Predicted survival time is increased by extra body fat and decreased by small body size. Although women generally possess slightly more fat than men they cool slightly faster due to their usually small body size. However, for comparable sizes, the man will cool faster.

"COLD WATER SURVIVAL"
CANADIAN RED CROSS

ANNEX III

(Excerpts from SAR Operation Report)

UNITS TASKED AND RESPONSE TIMES

<u>UNIT NAME</u>	<u>TIME TASKED</u>	<u>UNDERWAY</u>	<u>ETA</u>	<u>TIME ON SCENE</u>
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DAY 1 - 26 April 1986:

MARINE:

CGC Teal	1315	1342		1426
S/V Ithaqua (CMRA)	1325			1325
S/V Whirlwind	1325			1325
Jolly Dog	1436			1453
Midnight Dancer	1436			1453
Tug Haida Warrior	1436			1436
PDQ 5	2326			2326

AIR:

Buffalo R-458	1342	(Stood down Tasked to H537)		
Labrador R-304	1342	1442		1450
Labrador R-307		1840	1850	
Buffalo R-454	1740			1740

DAY 2 - 27 April 1986:

MARINE:

CG Tern	1004			1052
HC 045		0645	0745	

AIR:

Labrador R-307	0528	0714		
Labrador R-307	1157	1222	1230	1230
Labrador R-302	1312	1402	1500	1425

DAY 3 - 28 April 1986:

MARINE: Nil

AIR:

Labrador R-307	0915			1200
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NOTE: Owing to the rapid space at which most of the SAR operations proceed, more so in their initial stages, occasional late entries are made in the RCC log and consequently, these recorded timings may differ from the time reflected in the text.

ANNEX IV

NATIONAL SEARCH AND RESCUE MANUAL

28. It will be the responsibility of the OSC or CSS to:
- a. carry out the plan for the conduct of the operation as directed by the SM/RCC;
 - b. modify the plan as facilities and on-scene conditions dictate and inform the RCC/SM of any such modifications;
 - c. monitor weather and sea conditions and report on these at regular intervals to the RCC/SM;
 - d. maintain communications with the RCC/SM and the SAR units on scene;
 - e. maintain a detailed record of the operation, including on-scene arrival and departure times of SAR units, areas searched, track spacing used, sightings and leads reported, actions taken and results obtained;
 - f. issue regular situation reports to the RCC/SM which should include, but not be limited to, weather and sea conditions, the results of search to date, any actions taken, and any future plans or recommendations; and
 - g. advise RCC/SM to release units when their assistance is no longer required.

ANNEX V

CANADA SHIPPING ACT

Ship Station Technical Regulations

Qualified Operators

65. (1) Every MF radiotelegraph installation shall be operated by an operator, holding a First or Second Class Radiotelegraph Operator's Certificate or a Radiocommunication Operator's General Certificate for the Maritime Mobile Service.

(2) Subject to subsection (3), every MF, combined MF/HF and every VHF radiotelephone installation shall be operated by a person described in subsection (1) or by a person holding a General Radiotelephone Operator's Certificate.

(3) The holder of a Restricted Radiotelephone Operator's Certificate may operate a radiotelephone installation referred to in subsection (2) if

- (a) the operation of the transmitter requires only the use of simple external switching devices excluding all manual adjustment of frequency determining elements; and
- (b) the peak envelope power of the transmitter does not exceed 1.5 kilowatts.

APPENDICE V

LOI SUR LA MARINE MARCHANDE DU CANADA

Règlement technique sur les stations (radio) de navires

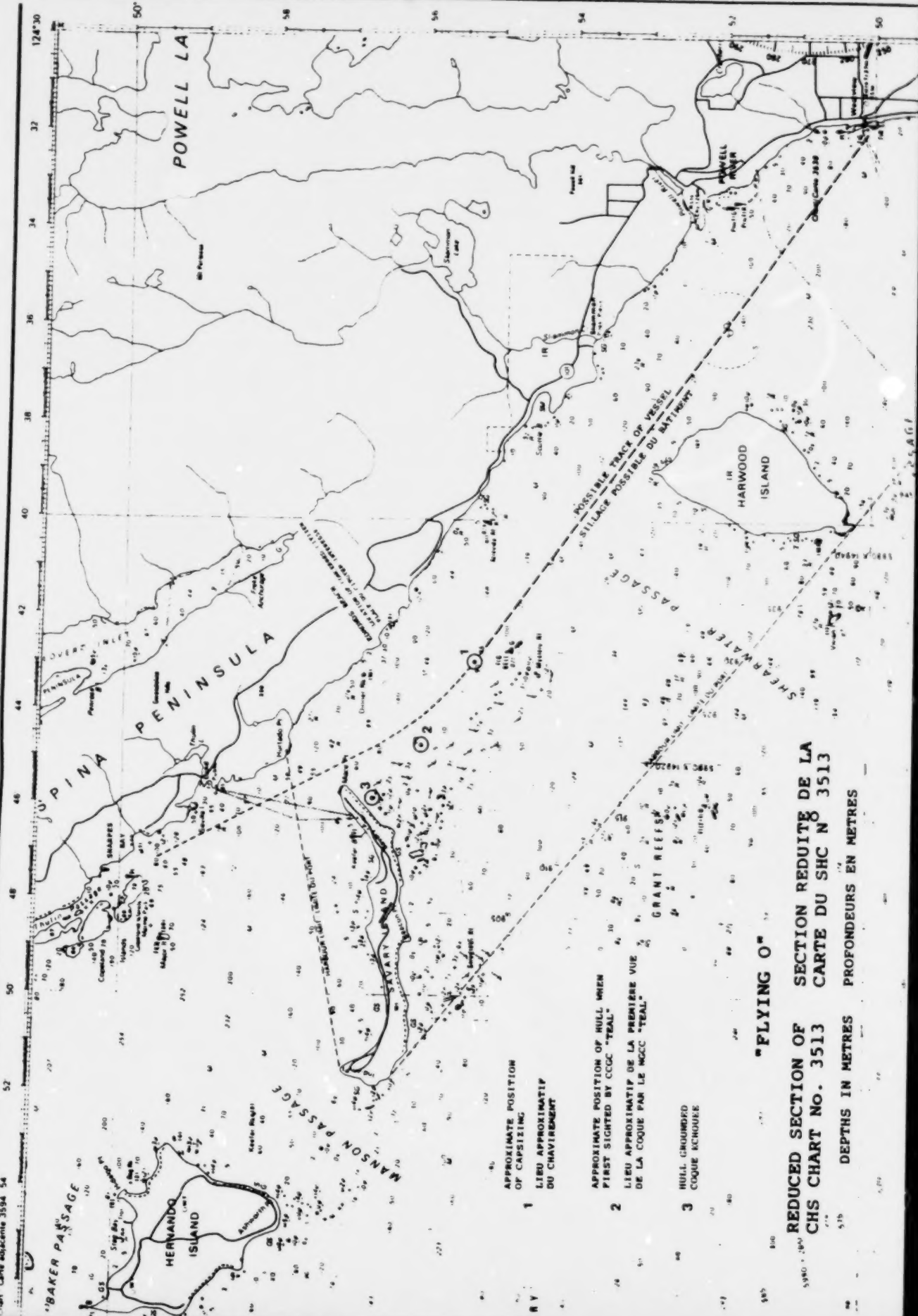
Opérateurs qualifiés

65. (1) Les installations radiotélégraphiques MF doivent être exploitées par un opérateur titulaire d'un certificat de radiotélégraphiste de 1^{re} ou de 2^e classe ou d'un certificat général en radiocommunication pour le Service mobile maritime.

(2) Sous réserve du paragraphe (3), l'utilisation de toute installation radiotéléphonique MF, de toute installation radiotéléphonique combinée MF/HF et de toute installation radiotéléphonique VHF doit être confiée à une personne décrite au paragraphe (1) ou au titulaire d'un certificat général de radiotéléphoniste.

(3) Le titulaire d'un certificat restreint de radiotéléphoniste peut utiliser une des installations radiotéléphoniques visées au paragraphe (2) si,

- a) pour faire fonctionner l'émetteur, il suffit d'utiliser des interrupteurs ou commutateurs extérieurs simples excluant tout réglage manuel des éléments qui déterminent la fréquence et
- b) la puissance de crête de l'émetteur ne dépasse pas 1,5 kW.



"FLYING O"

REDUCED SECTION OF
CHS CHART No. 3513
..

DEPTHS IN METRES PROFONDEURS EN METRES

FISHING ZONES OF CANADA / ZONES DE PÊCHE DU CANADA
 Chart indicating the Fishing Zones of Canada as determined by O-10
 in Canada P.C. 1977 200 and P.C. 1977 1

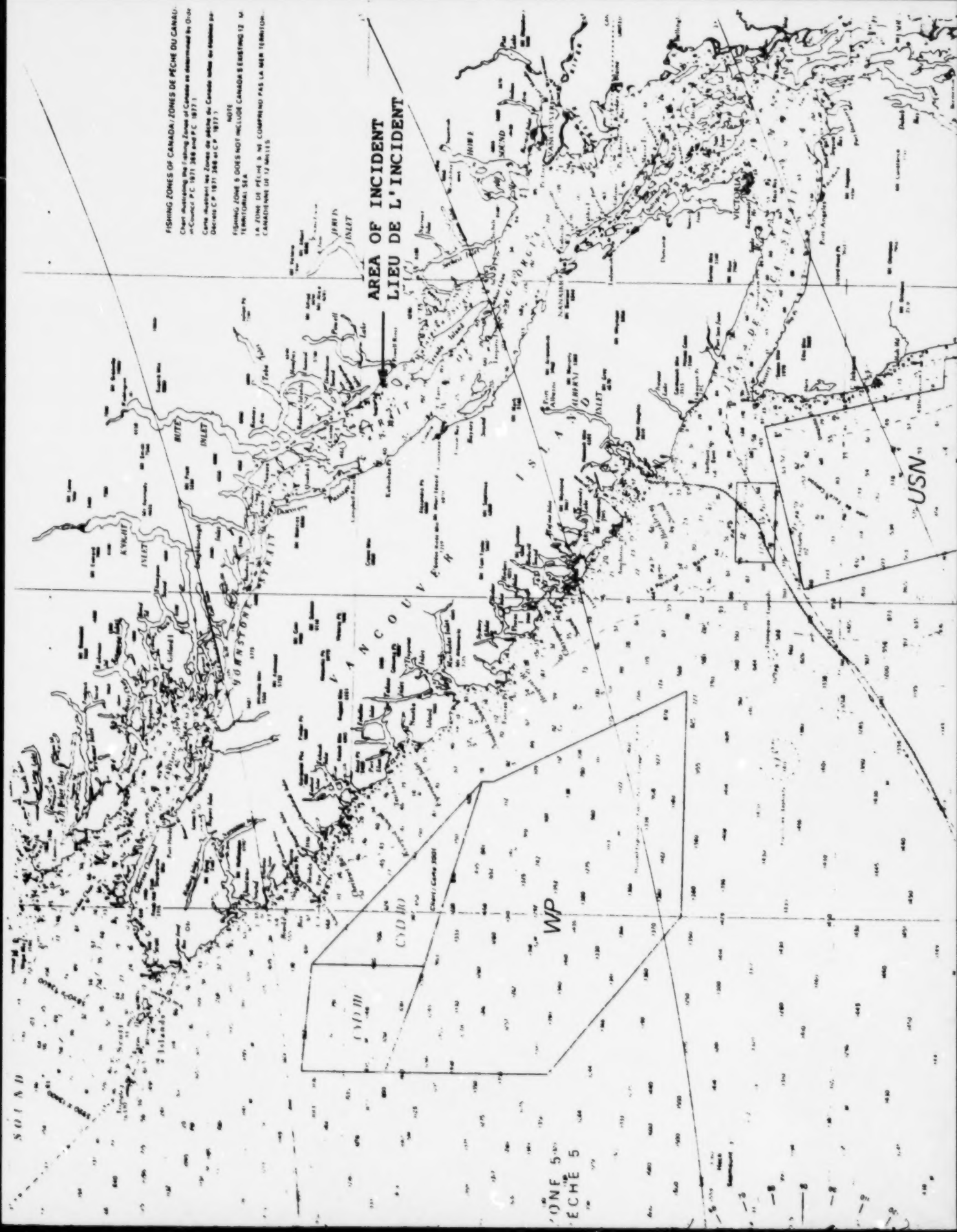
Carte indiquant les Zones de pêche du Canada telles qu'établies par
 l'O-10 en Canada P.C. 1977 200 et P.C. 1977 1

NOTE

Fishing Zone 5 DOES NOT INCLUDE CANADA'S EXISTING 12 MI
 TERRITORIAL SEA

LA ZONE DE PÊCHE 5 NE COMPREND PAS LA MER TERRITORIALE
 CANADIENNE DE 12 MILES

AREA OF INCIDENT
 LIEU DE L'INCIDENT



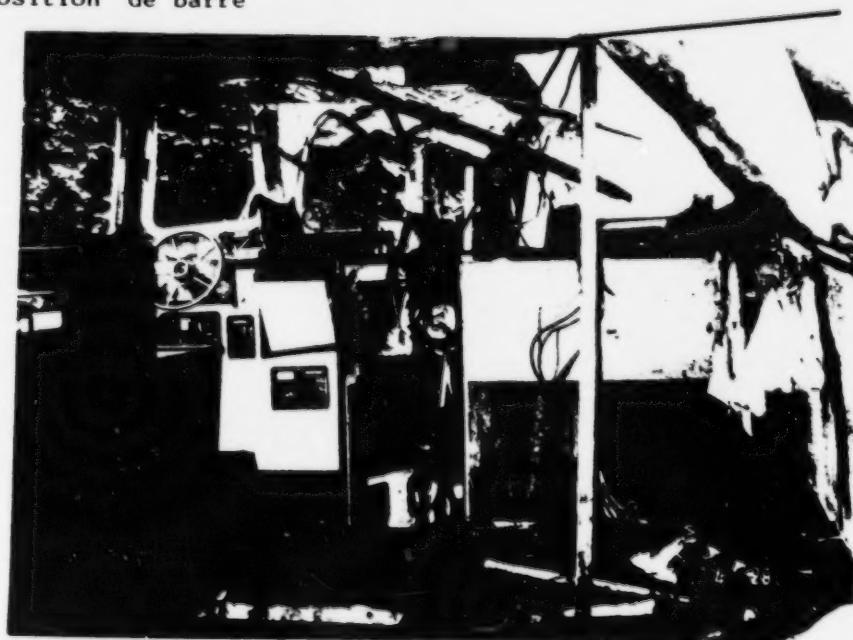


F/V "FLYING O"
B/P "FLYING O"

Steering Poste
Position de barre

Entrance to
Pwd Compartment

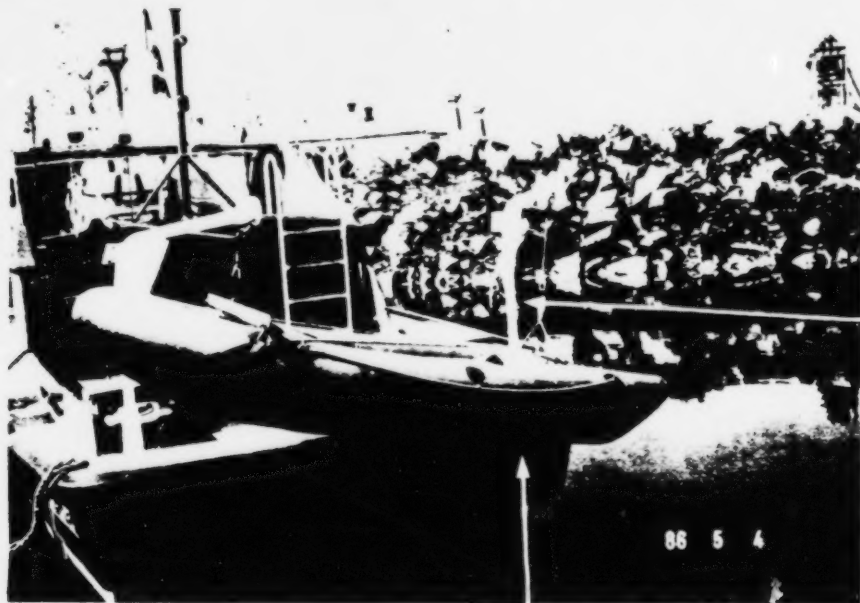
Entrée du
compartiment
avant



Engine Hatch

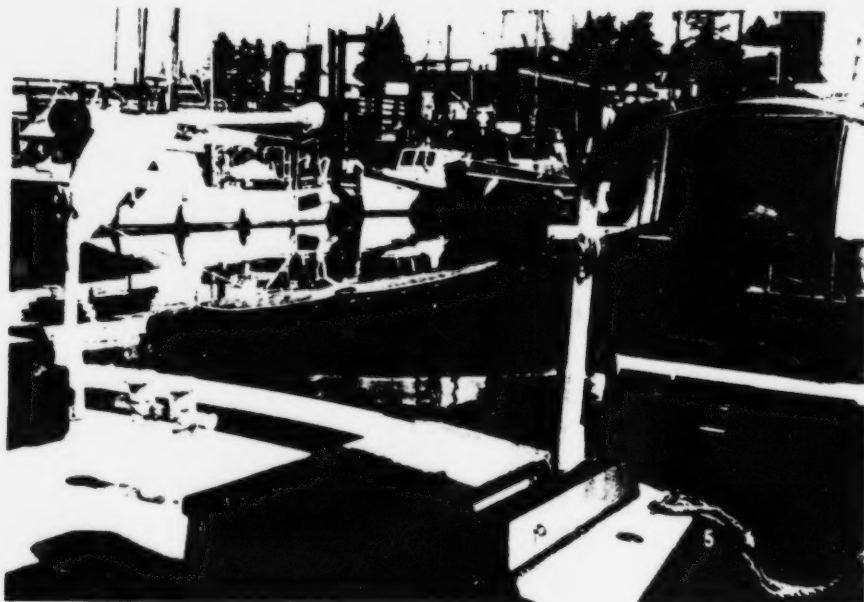
Ecoutille
de l'espace
machine

CGC "TEAL"
NGCC "TEAL"

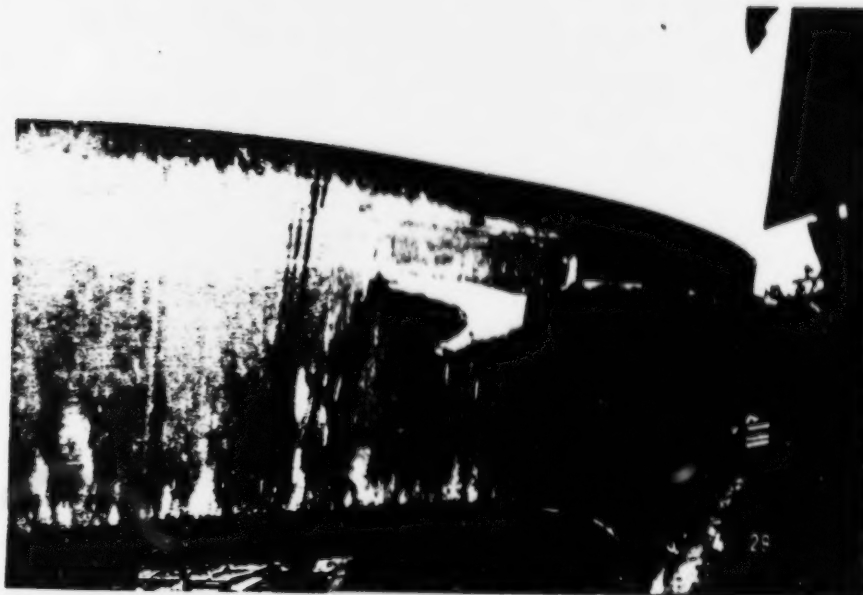


Davits
Bossoirs

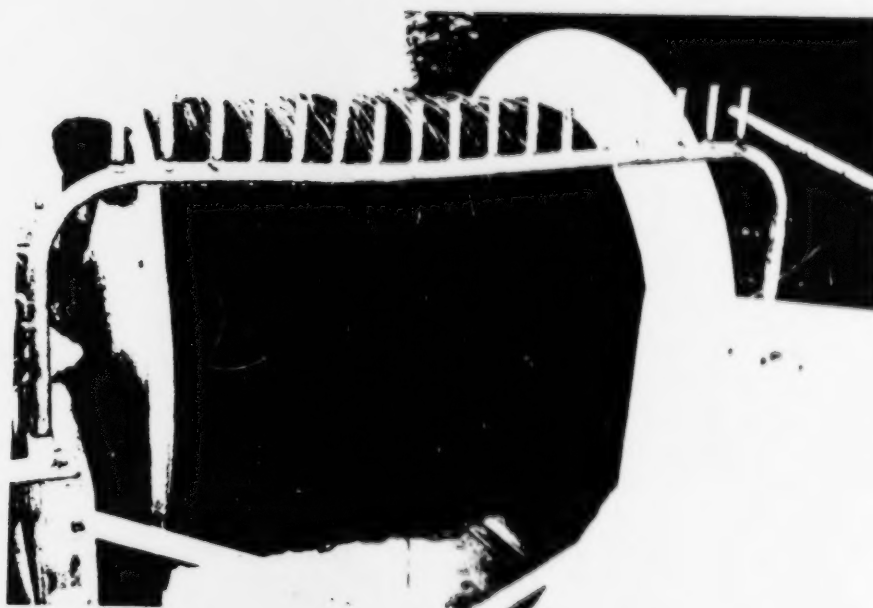
Inflatable Boat
Engin pneumatique



F/V "FLYING O"
B/P "FLYING O"



Waterline
Ligne de flottaison



Drum with
Longline
Tambour
avec
longue ligne